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## IRISH BREEDING-STATIONS OF THE GANNET, *SULA BASSANA.*

KNOWING that the Gannet was reported to breed on the Bull Rock, about three miles W.N.W. of Dursey Head, Co. Cork,\* in addition to its long recognized Irish breeding-station on the Little Skellig, I made arrangements to visit it early in the month of June last.

Before giving a brief account of my excursion, it may be interesting to refer to some statements regarding the breeding of the Gannet in Ireland. Thompson in his 'Natural History of Ireland' (vol. iii., p. 263), quotes the 'History of Kerry,' by Smith, who, describing the "second or middle Skellig," which is no doubt identical with the "Skellig Rock little," or Little Skellig of the Ordnance Map, says:—"Tis remarkable the Gannet nestles nowhere else on the south coast of Ireland, and though multitudes of them are daily seen on all parts of our coast, upon the wing, and in the sea, yet they were never known to alight on any other land or rock hereabouts, except on this island."

Smith's 'Kerry' was published in 1766, and, though I have no copy beside me, it is probable the Lemon Rock (a small low rock much nearer land) was counted as one of the Skelligs by Smith,

\* See 'Zoologist,' 1882, p. 110, and 'Migration of Birds at Lighthouses,' 5th Report, p. 89.



since he speaks of a middle Skellig, as if there were three. The Ordnance Map gives but two, the Great and Little Skellig,—the former being 714 feet and the latter 440 feet high; they are a mile and a quarter apart. It will thus be seen that Smith, writing one hundred and twenty years ago, confines the Gannet to the Little Skellig. Thompson, however, quotes Mr. Chute, who, in 1849, stated that "at the larger Skellig they used to abound," until the lighthouse was erected there. Mr. Armstrong, the Secretary to the Irish Lights Board, informs me that this was in 1826.

Michael Shea, of Dursey Island, contractor for attending the Calf Rock Lighthouse previous to its destruction in 1881, writes to me that he "believes that the Gannet did not breed on the Bull until after the Skellig Light was erected."

If the Gannets ever nested on the Great Skellig, the erection of the lighthouse in 1826 would certainly have disturbed them, and probably caused them to desert the rock. It is noteworthy, however, that Smith makes no mention of the Great Skellig as a breeding-place, and that the Gannet is now confined to the Lesser Skellig as in his time. He refers to "another rock on the north coast of Ireland, where they alight and breed in the same manner," as on the Little Skellig. Thompson is unable to conjecture what rock is meant.

The Stags of Broadhaven, off Mayo, are subsequently mentioned by the last-named author as a reported breeding-place of the Gannet on the Irish coast, his authority being Mr. Townsend, who, it appears, visited that part of Mayo in July, 1836. Mr. Townsend describes the Gannets and the Stags, and says there "cannot be a doubt the Gannet breeds at Broadhaven." Michael Duffy, keeper at the lighthouse there, which is some miles distant from the Stags, wrote to me in 1882 that "the Gannet does not breed on the Stags, but is to be seen after herring" (see 'Report on the Migration of Birds,' 1882). It would be interesting, if it were possible, to reconcile these conflicting statements.

The Calf, Cow, and Bull Rocks are generally the first land sighted by the American liners on this side of the Atlantic. The Calf is three quarters of a mile S.W. of Dursey Head; a mile and three quarters N.W. of the Calf is the Cow; and another mile further out lies the Bull. They are almost in a

line. The height and size of these rocks, compared with the Skelligs, is as follows :—

	Height in feet.	Area.			Miles from shore.
		A.	R.	P.	
Calf ... ...	78	0	1	33	$\frac{3}{4}$
Cow ... ...	215	1	3	2	$1\frac{3}{4}$
Bull ... ...	302	1	0	8	3
Little Skellig ...	440	16	3	18	7
Great Skellig ...	714	44	1	28	$8\frac{1}{2}$

The Bull, Cow, and Calf are about sixteen miles S.E. of the Skelligs. The lighthouse on the Calf Rock was destroyed by a great storm in November, 1881, and it was decided to erect the new lighthouse on the Bull Rock. The works were commenced this year, and a steamer was stationed at Castletown Berehaven, in April, to convey the workmen to and from the Rock. These men are engaged blasting and quarrying away the summit of the Bull, to make a foundation for the new lighthouse.

Owing to my connection with the British Association Committee on the Migration of Birds at Lighthouses, permission was obtained to go out in the steamer—a concession not readily granted. The landing is so difficult in bad weather that the workmen had only been on the rocks fourteen days in two months. I asked my friend Mr. R. J. Ussher to accompany me, and Mr. J. N. White, of Waterford, and my nephew completed the party.

Until we were quite near the Bull, comparatively few birds were visible, but thousands filled the air as we anchored about 150 yards from the rock. The firing of a shot was followed by the appearance of a greater number of birds than I remember to have seen, except at St. Kilda. I spent three weeks on St. Kilda in 1883, living in a tent on the main island, and running some risk of spending three months there, or perhaps a whole winter had the weather proved boisterous. At St. Kilda, also, I was much struck by the scarcity of birds a little way out at sea. When approaching this remote group of islands, at a distance of two or three miles, one could scarcely suppose he was near the greatest breeding-place of sea-fowl in the British Isles.

To climb the Bull at the present landing-place would be difficult, were it not for the rope ladder-used by the workmen.

A lofty arch runs right through the rock. Its direction in the Ordnance Sheet is due N. and S., and it is over this arch, at both ends, that the Gannet breeds in greatest numbers. Over the southern entrance they are most numerous, occupying every shelf and ledge on the cliff, from the top of the arch to within thirty feet of the top of the Bull. At least 150 feet of the cliff is here literally white with Gannets. I estimate the number breeding on this, the southern face, at 1200 to 1500. Some two hundred feet over the northern entrance to the arch the blasting operations are in progress, and far fewer Gannets breed. Indications are not wanting, however, to show that here also they must have had a large colony; but the showers of stones falling down the cliff from the top of the island have banished all but a few courageous birds, which still cling to their nests, and sit hatching as the rocks and *débris* fly past and even over them. No Gannets breed on the east side, but on the western face there are several nests. Altogether perhaps 2000 breed on the Bull.

In 'The Zoologist' for 1876, p. 5048, Mr. J. H. Gurney, jun., put a query about the materials of Gannets' nests, quoting from H. Boece (1526), Willughby (1678), and others. Mr. Gurney found all the Gannets' nests he examined on the Bass Rock to be composed of seaweed mixed with grass. At the Bull, seaweed predominated, but a few nests had some grass mixed with it. The island of Borrera (1072 feet), at St Kilda, has in the breeding season a flock of Gannets frequently on its grassy top, pulling materials for their nests. Martin, who visited St. Kilda in 1697, in his 'Voyage' to that island, says (at page 8), that two Gannets "confirmed the truth of what has been frequently reported, of their stealing from one another grass wherewith to make their nests, by affording us the following very agreeable diversion, and it was thus: one of them finding his neighbour's nest without the fowl, lays hold on the opportunity and steals from it as much grass as he could conveniently carry off, taking his flight towards the ocean; from thence he presently returns as if he had made a foreign purchase, but it does not pass for such, for the owner had discovered the fact before the thief had got out of sight, and, too nimble for his cunning, waits his return, all armed with fury, and engages him desperately; this bloody battle was fought above our heads, and proved fatal to the thief, who fell dead so near our boat that our

men took him up, and presently dressed and eat him, which they reckoned as a good omen of success on the voyage."

Whether this account of Martin's can be credited or not, it may be evidence to show that the Gannets at St. Kilda desire to have grass in their nests, and do not rely altogether on seaweed.

The natives of St. Kilda told me they frequently got bits of candle in the nest of the Gannet! When at the Bull I saw the semi-digested remains of what I believe was once a squid, close to a Gannet's nest. It was just disgorged, and, with the cuttle-fish bone inside, bore a strong resemblance to a candle covered with slime!

In the 'Proceedings of the Belfast Natural History Society,' 1873-4, there is a paper on the swimming-birds of Belfast Lough. At page 110, on the authority of Mr. M'Donald, commander of H.M. cruiser 'Vigilant,' the following estimate is given of the Gannets breeding at the five Scotch stations:—Ailsa Craig, 12,000; Bass Rock, 12,000; St. Kilda, 50,000; the Stack, 50,000; Sula S'Geir (or Sulisker), 300,000. It is not easy to take a census of birds with the eye, but I should think 20,000 Gannets at St. Kilda would be more accurate. They have three breeding-places there: Stack-a-Lii, Stack-a-Narmin, and the island of Borrera; and all are inhabited, like every other British breeding-station. Sulisker is thirty-three miles north of the Butt of Lewis, and must be well worth a visit. The Stack is twenty-three miles N.E. of Cape Wrath, in Sutherlandshire. Next year, if possible, it is my intention to see both these stations.

In 1880 I was on both the Great and Little Skellig, and the number of Gannets then breeding on the latter seemed very few—scarcely thirty pairs—I thought; so that the Bull is now the greatest Irish breeding-place. It is possible I may not have seen all the Gannets on the Little Skellig in 1880, for although I have climbed the Matterhorn, Jungfrau, and many other peaks, I was baffled by a chasm on this rock, and failed to see the Gannets at close quarters. My guide crossed it, but would probably have fallen as he returned, had I not remained behind to pull him up. We had not time to choose an easier way.

This year we started for the Skelligs, after visiting the Bull, but bad weather compelled us to return when scarcely half way. The boatman who attends the lighthouse was with us, and said

he never saw so many Gannets breeding on the Little Skillig as this year. This would lead one to suspect that when driven from the Bull by the blasting, they migrated to the Skilligs. The reverse process has probably been going on for several years. That the Gannets will completely desert the Bull in two or three years I have little doubt. Some may establish themselves on the Cow, a mile distant. Michael Shea, of Dursey Island, states that a few already breed there. We did not land on the Cow, but passing close in the steamer no Gannets were visible. The young speckled birds of a year old must keep away from the breeding-stations, for at the Bull scarcely two Gannets in a hundred were speckled, and at St. Kilda about the same proportion.

The birds breeding on the Bull Rock, in order of numbers, are :—

Razorbill, <i>Alca torda</i> , Linn. ...	...	5000
Gannet, <i>Sula bassana</i> , Linn. ...	...	2000
Guillemot, <i>Uria troile</i> , Linn. ...	...	1000
Ringed Guillemot, <i>Uria troile</i> var. ...	...	20
Puffin, <i>Fratercula arctica</i> , Linn. ...	...	500
Kittiwake, <i>Larus tridactylus</i> , Linn. ...	...	300
Herring Gull, <i>Larus argentatus</i> , Gm.	...	100 ?

No nest of the last-named species was seen ; only the birds.

Taking the same area of rock surface, more Razorbills breed on the Bull than at any other locality I have visited (St. Kilda not excepted). The Doon at St. Kilda, and the Tearaght Rock, one of the Blasket group off Dingle in Kerry, are the greatest breeding-places of the Puffin I have seen. The Great Skellig, perhaps, comes next; then Tory Island, N.W. of Donegal. The surface of the Bull is too rocky for the Puffin, which prefers to burrow in soft turf-cliffs. From experience I can state that the Puffin is excellent eating ; plucked, split in two, and roast, it is quite equal to duck.

Botanically speaking there is one point of interest about the Bull, *i.e.*, the occurrence of *Lavatera arborea*, Linn., growing luxuriantly on its summit. This plant is only admitted into the Irish list of phanerogams as a doubtful native ('Cybele Hibernica,' p. 54). I have also gathered it on Innishnabro, and on the Tearaght Rock, but nowhere have I seen it more likely to be indigenous than on the Bull Rock.

Since writing the above I have received a letter from Mr. Robert Warren, of Ballina, Co. Mayo, in which he says:—“I have no authentic record of the Gannet beeeding on the Stags of Broadhaven. Dr. Darling sent his brother there in the summer of 1882, but there was no trace of them, nor did a young cliff-climber whom they employed know of their breeding within his memory. Sir R. Payne-Gallwey (*'The Fowler in Ireland,'* p. 261) must have mistaken what I wrote to him. Mr. Townsend's account to Thompson dates back to *July, 1836*. Is it possible young Gannets fly in that month ? ” Mr. A. E. Knox said, January 3rd, 1851 (see Thompson, vol. iii., Appendix, p. 451), that Gannets used to breed on the Stags of Broadhaven when he was a boy, “but not in numbers.” My cautious friend Mr. Warren adds, “neither Mr. Knox nor Mr. Townsend saw nests.”

The Fastnet Rock, eight miles S.W. of Cape Clear, Co. Cork, is inaccurately given as a breeding-place in Sir R. Payne-Gallwey's book (p. 136), for neither the Gannet nor any other bird breeds on the Fastnet. The light-keeper there has just written to me, —“The Gannet does not breed on the rock, nor never did; in fact, no bird could breed there, as the rock is too small.” Anyone who has seen the model of the Fastnet in the Irish Lights Office can appreciate the truth of this remark. The lighthouse was erected in 1848, and the rock is only 52 feet above the sea-level.

RICHARD M. BARRINGTON.

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EARLY in June last, in company with Messrs. R. M. Barrington and J. N. White, I visited the coasts of West Cork and Kerry, with a view to Ornithology. Leaving Berehaven at 4 a.m., we coasted along the rock-bound peninsula of which Dursey Island forms a continuation. We then struck out into the Atlantic, towards those last fragments of land, the Cow, the Calf, and the Bull Rocks. On the latter (our special destination) a lighthouse is about to be erected. As we approached the Bull, which rises 293 feet out of the Atlantic, we were impressed by its appearance. The front presented to us is conical, like the front of a saddle, with slightly bulging sides, terminating below in cliffs. The island is pierced from end to end with a huge arch, through which the sea flows. The eastern and western ends are precipitous, and on the lofty ledges above the arch we

saw multitudes of Gannets, while numbers of these and of the Alcidæ swarmed around and above. On the whistle of the steamer being sounded, the Gannets on the rock took flight, launching themselves forth from their lofty breeding-shelves, with outstretched necks and lengthy wings, in such numbers as exceeded anything we had anticipated. This surprise was heightened when, on rowing round the island, we found quite as many, if not more, Gannets breeding on similar elevated ledges, their nests being always placed high out of reach of the ocean breakers, at the western end and above the north-west corner. The lower rocks, especially some large detached ones near that corner, were thickly covered with Gannets, probably the males and more breeding birds. All these were in the white adult plumage, but we saw during the day an occasional grey immature Gannet on the wing, assuming the white on its head and shoulders. After comparing our estimates and cutting them down, we concluded that there were probably from a thousand to two thousand of these birds breeding on the Bull Rock. About twenty-five years ago, Mr. G. H. Kinahan, who was then at Castletown, Berehaven, on the Geological Survey, was well assured that no Gannets bred on this rock, for the clergyman of Berehaven, having then visited it, asked him after the visit why it was that Gannets bred on the Skelligs and not on the Bull Rock? "Many hundreds," however, were found breeding there in 1868, by Mr. S. N. Hutchins, as appears by a note from the Rev. W. W. Flemyng ('Zoologist,' 1882, p. 110.)

On ascending the rock we found we could get to some of the Gannets' building-ledges, both at the east and west ends, and a few of the birds remained on their nests till we approached within a pace of them. The nests were invariably of seaweed, with occasionally a little grass, not so well built as those of Cormorants. Each usually contained one egg or young bird, but in two instances I saw nests containing two eggs each. On emptying one of these pairs I found one egg fresh, the other decidedly sat upon, so that they may have been laid by different birds. Most of the eggs, from their soiled appearance, must have been sat upon some time. The naked black young, newly-hatched, contrasted quaintly with those which had assumed the white downy covering which added greatly to their apparent growth. One nest contained a half-digested fish about the size

of a mackerel. The harsh croaking cry of the Gannets was very striking. They are courageous birds: numbers of them sat while blasting took place close by, the splinters falling in showers around them, while Razorbills might be seen looking out of their nooks from under the very avalanche of *débris*. These quarrying operations have desolated a large portion of the rock, which is strewn with broken eggs of Razorbills and Guillemots. The former species is far the most numerous on the Bull Rock. Comparatively few Puffins breed, the rocky nature of the island and the absence of vegetable soil obliging them to lay under rock fragments and in fissures. Kittiwakes have garnished the lower cliffs with their numerous nests, but very few Herring Gulls or Lesser Black-backs breed on the Bull. There was also an absence of Cormorants, Shags, Oystercatchers and Terns; although on the Cow, another lofty rock about a mile and a quarter distant and 215 feet in height, we noticed a colony of Cormorants and many Herring Gulls, but no Gannets. The most striking plant on the Bull Rock is the *Lavatera arborea*, which grows on its summit to a height of four feet. During our subsequent coasting voyage we noticed a pair of Black Guillemots at Cod's Head, Co. Cork, and others in Ballinskelligs Bay.

On the 11th June we left Port Magee for the Skelligs, but after rowing an hour a heavy sea deterred our boatmen. We were then off the north side of Puffin Island, whose knife-backed ridge rose to our left against a sky covered with swarms of birds that breed in these cliffs. Manx Shearwaters, with their light flight, were skimming the sea around us.

We then rowed round the eastern extremity of Puffin Island, which is the lowest and nearest the mainland, from which it is distant only a furlong. Here a colony of Terns took wing. These from their slaty colour appeared to be Arctic Terns. On landing we found the surface where they breed composed of laminated rock on edge, in the interstices of which were several pairs of their eggs slightly incubated. Oystercatchers and Wheatears were breeding close by, and Rock Pipits numerous.

We then proceeded along the island, which is about a mile in length, but uninhabited. The northern side is a series of precipices 474 feet high, but the southern side, though steep, is clothed with thrift, forming a peat soil beneath it. Along this

steep surface one can creep rather than walk. It is pierced by innumerable rabbit and puffin-holes. Our conductor examined these, and where he found a slight trace of white dung at the mouth of one he tore up the peat, inserted his arm, and drew forth a Shearwater, then her egg. On searching another hole, near which he pointed out a similar white speck on the thrift, he pulled out a Storm Petrel and her egg. After a long search we procured a few of each species. We found these Shearwaters and Petrels breeding in a steep slope overlooking the sea, though at a very considerable height. On being liberated the Petrels always went with a zigzag flight down the cliffs. Their eggs were fresh, but those of the Manx Shearwaters were hard sat upon. Two Shearwaters, on being put into a basket containing cotton-wool, continued to burrow in the latter till they reduced it to rags, while two Petrels, also put into this basket, kept dancing about on the top of the wool. The burrow inhabited by a Puffin may be generally distinguished from that which a Shearwater frequents by the quantity of dung at its orifice. The latter, bird being nocturnal in its habits, does not so frequently enter and leave the hole as the busy Puffin, and leaves fewer traces after her.

On enquiring for the Great Black-backed Gull, our guide took us to the narrow western extremity of the island, where the ridge is lower and exclusively rocky. Here, on the very top, we found a nest of this species, composed of tufts of thrift and some withered stems. It contained three handsomely-marked eggs. Our guide had previously this year taken another set of eggs of the Great Saddle-back from this spot, to eat. Lower down among the rocks, Herring Gulls and Lesser Black-backs had their nests. Mr. Barrington pointed out a rocky islet rising to a height of 50 or 60 feet, where from his experience in St Kilda he expected to find, and accordingly did find, on the very summit, another nest of the Great Black-backed Gull with three eggs. We saw some pairs of Choughs frequenting Puffin Island, which appeared to have nests in the lower cliffs. A deserted nest of the Hooded Crow in the cavity of a projecting spur, was easily accessible from the slope above which it rose, and strikingly contrasted with the inaccessible positions in which I have found this species breeding in more frequented places.

R. J. USSHER.

## NOTES AND QUERIES.

## MAMMALIA.

**Greater Horse-shoe Bat at Oxford.**—A friend of mine one evening in October, about ten years ago,—he thinks in 1875,—shot a specimen of this bat as it was flying over the reservoir here, and kept it some days in his house, but did not have it preserved. He was able to compare it, however, with a figure of the species, and he says it was very large, so that I have no doubt as to its identity. Like the specimen of Bechstein's Bat obtained at Godstow, as recorded in the 'Midland Naturalist,' it may, I suppose, be considered a native of Berkshire, the reservoir being on the south side of the river. Is not this the most northern English (perhaps European?) locality known for the species? For, excepting the counties of the south coast, it seems only to have been reported from Swansea, Bristol, Clifton, and Weston-super-Mare (from which place there is a specimen in the Oxford Museum), the Colchester record being considered a mistake.—J. E. KELSALL (Balliol College, Oxford).

[We have a note of one taken at Carperley, Wensleydale, by Mr. Carter, of Burton House, Bedale, which would place the range of this species in England considerably to the north of Oxford.—ED.]

**Rudolphi's Rorqual at Goole.**—The article on the Finwhale Fishery by Mr. Cocks, in your last number, proved very interesting to me, inasmuch as we had shortly before captured a young male Rorqual, and I will, with your permission, give a short description of it. It was seen in the Humber and Ouse on September 5th, and shortly after high water that evening was observed by some boys trying to get into the Barge Lock, attracted, in all probability, by the clear water escaping from the docks. The boys, with assistance, opened the lock-gates, and the animal at once entered; the gates were closed, and the capture was complete. After a very severe struggle it was killed, lashed to a vessel, and in the morning lifted out of the water by a large crane. It was carefully weighed and measured, with the intention of getting it properly identified. The length was 32 ft. 6 in.; greatest girth, 15 ft. 6 in., least (near the tail), 4 ft.; height at the flippers, 4 ft. 8 in.; length of flipper, 4 ft. 1 in.; length of dorsal fin, 2 ft. 4 in.; length from that fin to the tail, 9 ft. 3 in.; flukes of tail, 7 ft. 2 in.; across, breadth of fluke, 2 ft. 8 in.; from tip of jaw to blowholes, 4 ft. 5 in.; from end of jaw to eye (situated near the angle of the mouth), 5 ft. 6 in.; exposed portion of eyeball, 3 in. Weight nearly 9½ tons. The colour was black and smooth above, white on the under parts; the curious plaits or folds extended longitudinally from the under jaw to the middle of the body. The flippers were black on both sides. The baleen tapered in length from fifteen to

two or three inches, the palate being almost covered with the fringe, which was of a dirty white colour. The blubber was stripped off on Sept. 8th, and varied from three to seven inches in thickness. As this was the first visit of any of the *Balaenopteridae* to Goole we were very anxious to have it properly recorded, and my friend Mr Birks wrote to Mr. Southwell, of Norwich, who expressed an opinion that it was Rudolphi's Rorqual, *Balaenoptera borealis*, and was kind enough to bring the capture to the notice of Dr. Günther, of the British Museum. An agent came to examine the bones, confirmed Mr. Southwell's opinion, and bought them for the British Museum. The money, together with that obtained by exhibiting the body at Goole, was presented to the Sailors' Institute.—THOMAS BUNKER (Goole).

**ERRATA.**—In the article on the Finwhale Fishery in Finmarken, p. 368, line 6, for "sand" read "Sound"; p. 369, lines 15 and 16, between "piping" and "which" insert "and containing a liquid"; same page, line 25, for "three-side" read "three-sided"; p. 419, line 5, insert comma after "who," and *dele* comma after "Norwegians"; p. 420, line 26, for "multiplier" read "accumulator"; p. 421, line 11, for "tompions" read "bitts"; same page, line 22, between "west" and "centre" insert "of the".

#### BIRDS.

**Probable occurrence of the Lapp Bunting near Grimsby.**—When walking home from Grimsby, on November 8th, through the west marshes,—a locality where I used formerly to shoot Snipe, and have stalked Wild Geese, but now in great part covered with houses and the new dock works and coaling of the Manchester, Sheffield and Lincoln Railway,—I disturbed a small bird from a swampy patch in a grown-up and disused drain. At the first glance I thought it was an unusually large Reed Bunting in summer plumage, but on alighting on a rail-fence within a few yards I at once saw it was a very fine adult male Lapp Bunting; from the rails it flew to some coal-trucks standing in the siding near the dock. The curious thing was that it was in nearly full summer plumage, the black portions only being somewhat (but very little) flecked or broken. The black of the head separated from the cheeks and breast by a very conspicuous light streak, the gorget seemed to cover much more of the breast than in the Reed Bunting, and it had not the white collar of that bird. In flight it showed some white on the tail. Altogether it was a stronger and more robust bird than the male Reed Bunting, nearly, if not quite, equal in size to a Snow Bunting. Reed Buntings have been very numerous this autumn, and much in excess of what we usually see, and I have recently heard that there has been a large migration across Heligoland. It is disappointing to see anything which cannot with certainty be identified; this, however,

happened to me early in October, when I saw a bird as large as a Snow Bunting running over the mown masses of floating weeds collected near the mouth of our main outfall-sluice. In colour it resembled the female Lapp Bunting, and may have belonged to that species; in flight it showed a dull white patch on the upper part of the wing near the bend. Its note, which had a sharp metallic ring, was quite new to me. I saw a Wheatear here on November 7th. No Snow Buntings up to this date (Nov. 10th). Altogether this has been a very remarkable season, quite a host of rare immigrants having turned up on the east coast.—JOHN CORDEAUX (Great Cotes, Ulceby).

**Lesser Black-backed Gull on the Yorkshire Coast.**—Mr. Carter's graphically written and interesting paper on "Egging on the Coast of Yorkshire," in the last number, has recalled very vividly to my mind the grand Yorkshire cliffs along which I enjoyed many delightful rambles in the summer of 1875, 1876, and 1877. I have little doubt that the hawk's eggs referred to by Mr. Carter (p. 447) were the eggs of the identical Peregrine mentioned by me in 'The Zoologist' for 1876 (p. 5040), as follows:—"Speaking to me on the subject of the young Peregrines . . . Mr. Brown told me he had four Peregrine's eggs brought him in the spring of 1875, taken on the Filey cliffs." If the Lesser Black-backed Gull can be satisfactorily identified as having bred on the Yorkshire cliffs, it will be a matter of great interest to many naturalists. I never saw the bird in the breeding season either at Filey or along the Bempton and Speeton cliffs; certainly eggs said to be those of this gull have been offered me on the Yorkshire coast, but I have always been very doubtful about them, especially as the would-be vendor (not a "climber") professed to be able easily to distinguish the eggs from those of the Herring Gull, which I do not believe any one can do. Mr. W. E. Clarke, in his valuable 'Handbook of the Vertebrate Fauna of Yorkshire,' does not mention this bird as breeding in Yorkshire, neither does Mr. Hewitson, nor the Editor of the new edition of "Yarrell." I hope Mr. Carter will make another expedition to the Yorkshire cliffs next summer, and give the readers of 'The Zoologist' the result of fresh enquiries on this point.—JULIAN G. TUCK (St. Mary's Clergy House, Bucknall, Stoke-on-Trent).

**A Supplemental List of the Birds of Breconshire.**—In 1882 I republished a "List of the Birds of Breconshire," which had appeared from time to time in the pages of 'The Zoologist.' Since then, through the courtesy of one or two ornithologists in this county, I have been enabled to add the following birds to my list, which, though making it far from complete, at least swells it to a very respectable total.

Black Redstart, *Ruticilla tithys*.—One seen some years since, resting for a short time on the leads on the roof of Llanthomas, near Hay, in this

county. As far as can be remembered, it was in the month of November. It is most rare with us, and I have never seen it, but my informant is such an excellent ornithologist that I have no doubt of its occurrence.

Bearded Titmouse, *Ponarus biarmicus*.—My last informant also reports that "what were believed to be one or two specimens of this bird were seen in the bog wood near Tregoya Hay, on the 28th of May in this year," which bears out the statement of one of my boys (which I confess I passed by), who accurately described the bird to me from a specimen he said he had seen at Llanthew, near Brecon, in August, 1883. I have also another report from Carmarthenshire, close to the edge of the county, and am inclined from the above to think it very rarely occurs here.

Snow Bunting, *Emberiza nivalis*.—Some were seen near Llanthomas Hay, in the month of January, 1879, and were easily recognised by their colour and size.

Turnstone, *Strepsilas interpres*.—One of these birds was killed at Llangorse Lake. Mr. Crawshay, who gave me this information, saw the bird, but unfortunately has forgotten the date.

Green Sandpiper, *Totanus ochropus*.—I have seen three of these elegant waders, that were killed at Talybont, on the River Usk. They occur every year in the spring, on a wet place there, but are seldom seen elsewhere in the county.

Bernicle Goose, *Anser leucopsis*.—One killed at Talybont on the Usk, by Mr. A. Crawshay, 1882.

Gadwall, *Anas strepera*.—Half a dozen seen on a small pool at Llandilo Graban, near Aberedw, close to this county, in August, 1880, as recorded by Mr. H. N. Ridley, 'Zoologist,' 1882, p. 431.

Leach's Petrel, *Procellaria leachii*, or as my correspondent calls it, the Fork-tailed Petrel. A specimen of this, to us, rare sea-bird, was shot on the banks of the River Wye, Breconshire, by Mr. Wood's keeper, on October 15th, 1877. The previous night and morning were remarkable for one of the severest south-westerly gales this country had experienced for many years.—E. CAMBRIDGE PHILLIPS (Brecon).

**Hooded Crow and Grey Phalarope at Malta.**—In the Valetta University Museum there are specimens of both these birds, which I think have not been previously recorded as having visited Malta. I cannot ascertain the exact date when the Hooded Crow was preserved; Dr. Gulia, Professor of Natural History at the University, says "a year or two ago." The Phalarope is labelled as shot at Malta, October 13th, 1879.—E. F. BECHER, Capt. R.A.

**Hobby in Oxfordshire.**—I have a fine male specimen of *Falco subbuteo*, which was taken alive, entangled in some pea-sticks at Great Bourton on the 21st July last. The bird was in perfect adult plumage. I purchased

another, also a male, from Mr. Darby, of Oxford, which was shot close to the city, and stuffed by him. Mr. Darby informs me that he has a young one which was killed at Waterperry, near Oxford, in the middle of September. On Sept. 2nd, while shooting at Bloxham Grove, near here, my brother and I saw a pair of these birds; one was flying rapidly round a clump of chestnut trees, apparently hawking for insects; the flight was peculiarly easy and graceful. We were able to get near enough to distinguish the colours, and the long pointed wings were very conspicuous.—F. C. APLIN (Bodicote, Banbury).

**Breeding of the Hawfinch in North Yorkshire.**—On the 22nd of May last my brother found a nest of the Hawfinch here, containing five beautifully marked eggs. The nest was about six feet from the ground, in a hawthorn bush growing by the river-side; it was built of twigs and lined with fine roots, but so loosely that, when standing below, the contents could be seen through the structure. The hen bird, which was sitting on the nest when it was discovered, sat very close, and when she left her eggs the male bird flew towards her, and both circled round in an agitated manner. In the same bush was another nest, constructed in the same way as the one described above, from which it was not a yard distant, and a brood of young had evidently been reared in this last year. In July, 1883, finding that much havoc was being wrought among the peas in the garden by some strong-billed birds, nets were thrown over the rows, and the following day a young male Hawfinch was found entangled in the meshes. After this no more damage was committed in our garden, but some of our neighbours complained that their green peas were being plundered in a wholesale fashion. I may mention that some years since an adult male Hawfinch was captured in the gardens at Swinton Park, in a net thrown over some rows of peas.—T. CARTER (Burton House, Masham).

**White Wood Pigeon and other Varieties.**—When walking up the meadows here on September 8th three Wood Pigeons flew past at about eighty yards, and I was surprised to see one of them was nearly white. This must have been the bird which has been about during the last three years, and how it has escaped so long is a wonder. A birdstuffer in Nottingham informs me that he has seen two white Sand Martins and a cream Redpoll lately, and we have a white Sparrow, a white Lark, and cream-coloured Wagtail about here. A cream-coloured Rook was picked up dead at Popplewick Hall last spring.—J. WHITAKER (Rainworth Lodge, Mansfield, Notts).

**Notes on the Birds of Berkshire.**—Our summer migrants were all early this year in arriving, with the exception of the Cuckoo, which I did not hear till April 29th. The Nightjar arrived either that date or the day following; a keeper saw young Nightjars newly hatched about June 5th,

but the greater number of eggs were found between June 20th and 30th ; one clutch of eggs I found in a thick pine plantation ; the others were under isolated trees, either small pines or Spanish chestnuts (see p. 91). Young House Martins were flying about June 22nd. On July 1st I came across two or three Crossbills, *Loxia curvirostra*, but could not accurately determine the number, because of the density of the pine foliage ; they haunted the same spot for several days, and I picked up a pine-cone partially stripped of its seeds, which one of them was surprised in dissecting ; they were all in the green plumage. The date seems rather an unusual one for these birds ; I have failed to find any during the autumn. The last of our Nightjars I saw flying at 6.30 p.m. on October 2nd. Great numbers of Golderests appeared at the end of September and beginning of October, but they have now considerably diminished. The season, with its number of acorns, has been most favourable for the Jays ; the woods here (the outskirts of Windsor Forest) are full of these birds and Green Woodpeckers. The latter birds seem to alter their habits in accordance with circumstances ; in quite the borders of the forest, where the old timber has been cleared and young trees have sprung up, they occasionally nest in holes in the ground, generally by a rotten tree-root or post ; they hunt their insects on the ground, digging quite deep holes in their eagerness after their prey. I have noticed that when flushed off the ground they seldom, if ever, utter the cry which they generally employ when startled—a shortened form of the "laugh" used in the breeding season. Peewits, of which in spring and summer there are great numbers, entirely disappear from the district in early autumn. Swallows and House Martins I last saw on October 20th. On November 1st, seeing two dark masses overhead at a great height, with the aid of field-glasses I made out two flocks of Wild Ducks ; each flock consisted of between fifty and sixty birds ; they were flying S.W., with a favourable wind.—T. N. POSTLETHWAITE (Hallthwaite, Millom, Cumberland).

**Eared Grebe and Velvet Scoter at Hunstanton.**—On November 3rd I received from Hunstanton a fresh specimen of the Eared Grebe, in the first year's plumage. The boatman who forwarded it to me, in a letter dated October 20th, told me that on the 16th he shot two fine Velvet Scoters, adding, "It is very early yet for wildfowl." He is a very intelligent observer, and knows the two species of Scoter perfectly well.—JULIAN G. TUCK (St. Mary's Clergy House, Bucknall, Stoke-on-Trent).

**Ornithological Notes from Oxfordshire.**—The Crested Grebes on the Reservoir had good-sized young following them by June 19th : the latter have a very shrill and rather loud piping cry, which they utter incessantly when following the old birds for food. As the Green Sandpiper has been mentioned several times in 'The Zoologist' and 'Field,' it may be well to state that Oxfordshire was visited by some numbers of these birds during

August: I noticed them first on the mud at Clattercutt Reservoir on the 2nd, when three birds were busy feeding at the very edge of the water near to some Common Sandpipers, with which, however, they do not associate. Mr. W. W. Fowler, writing to me from Kingham on the 11th, mentioned that they were there in unusual numbers. On the 21st I purchased an adult bird which was shot at Astrop, Northamptonshire, that morning; and a week later another—a bird of the year, I think—was shot on the Cherwell below Bodicote, and given to me. It is very rarely that the Green Sandpiper visits us in spring, but I saw one this year at the Reservoir on March 15th (the same day that the Chiffchaff arrived), and one on the river the year before, on the 25th of that month. With regard to the musky odour of this species, observed by some writers (*vide* Yarrell, 4th edition), I may mention that in the Bodicote bird it was very strong, while the Astrop bird had not a trace of it, and the man who skinned it said he ate the body and found it very good. A Black Tern (probably in its second year), changing to winter plumage, was shot at Barton on August 21st, and Mr. Darbey tells me he had an adult bird in May, which was killed on the Isis near Letchlade. On August 2nd and 4th I saw six Teal on the Reservoir—evidently a brood, but all full grown; they were probably hatched there or in the immediate neighbourhood. This is the first instance of Teal nesting in North Oxon that has come under my notice, although in 1880 I put up a pair from an osier-bed early in April. On September 7th two Gulls, apparently immature *Larus argentatus*, flew over Bodicote village within gunshot.—OLIVER V. APLIN (Gt. Bourton, Oxon).

**Barred Warbler in Yorkshire.**—An immature example of the Barred Warbler, *Sylvia nisoria*, was obtained by me on the Yorkshire coast on the 28th August last, and was exhibited at the evening meeting of the Zoological Society on November 4th. The bird is a female of the year; the wings and tail are much like those of the adult in markings, but a shade duller in tints; the rump is barred with white, and the faintest traces of dark bars appear on the flanks, back, and rest of under parts unbárred: irides brownish yellow; feet and legs horn-colour. It is much like an example shot in Sweden about the same time of year, and now in the British Museum. This makes the second occurrence of *Sylvia nisoria* in the British Islands. For the first record, near Cambridge, see Proc. Zool. Soc. 1879, p. 219.—H. H. SLATER (Irchester Vicarage, Wellingborough).

[A third specimen has been obtained in Norfolk. See p. 493.—ED.]

**White Stork at Pevensey.**—Mr. Vidler, of Pevensey, near Hastings, has kindly sent me a specimen of the White Stork, *Ciconia alba*, killed during the latter part of August last. Mr. Vidler writes:—"There were two of the Storks, and they remained about the sea-shore for several days, but seemed very shy: at last one was shot by a coastguard; the other flew away inland, and was seen no more.—T. H. NELSON (Redcar).

**Sabine's Gull in Dublin Bay.**—On Wednesday, the 5th November last, I had the good fortune to shoot, at Clontarf, a specimen of the rare Gull, *Larus Sabinii*, in the first year's plumage, and very similar to an example in the same state of plumage in the Museum of Science and Art. I have presented my specimen to the National Collection of Irish Birds, and I may add that I have had the advantage of Mr. A. G. More's opinion in its identification.—J. J. DOWLING (1, Fingal Terrace, Howth Road, Clontarf).

**Note on the Hooded Crow.**—The Hooded Crow, *Corvus cornix*, sometimes sits very closely. The first nest I got this season was found by a boy in April last. He thought the nest looked rather new, climbed the bush in which it was placed, and put his hand on the back of the bird sitting on the eggs. From his account to me, it was difficult to know whether he or the sitting bird was the most frightened.—WILLIAM W. FLEMING (Clonegam Rectory, Portlaw, Co. Waterford).

**Breeding of the Ruff in Lancashire: Correction of Errors.**—In my note on the breeding of the Ruff in Lancashire (pp. 466, 467) kindly make the following corrections:—line 11, for "Crosuns" read "Crossens"; line 15, for "Canner" read "Caunce."—ROBERT J. HOWARD (Blackburn).

#### MOLLUSCA.

**Abnormal Shell of Buccinum undatum.**—Through the kindness of Mr. Sibert Saunders, of Whitstable, I have received a very curious shell of



the Common Whelk, which had been found amongst a lot of others by a fisherman. I have made a sketch of it, from which it will be seen that the growth has gone on regularly down to the fifth whorl, but at that point, owing to some interference from without, the animal appears to have been compelled to forsake its old anterior canal and to carry out a new one at a

considerable angle from the central spire; this movement, in consequence of the size of the animal itself, caused the outer wall of the body-whorl also to leave its normal course and to bulge out to the extent of twice its usual diameter. Judging by the appearance of the new departure, the animal was healthy and vigorous, and had it been allowed to grow to its full size would have evidently developed into a most remarkable specimen, the extraneous cause of its curious growth having apparently disappeared. The shell is altogether an exceedingly interesting one.—EDWARD LOVETT (Addiscombe, Croydon).

## CRUSTACEA.

**Scyllarus arctus at the Land's End.**—I have received from Mr. Stephen Bond, of Sennen Cove, a specimen of *Scyllarus arctus*, which was captured off the Land's End. It is a small specimen with nothing special to note about it except that it comes from a new locality.—THOMAS CORNISH (Penzance).

[This more or less uncommon species is figured in 'The Zoologist' for 1879, p. 473.—Ed.]

**Abnormal Colour of Common Lobster.**—Messrs. Sinel & Co., marine zoologists, of Jersey, have sent me a specimen of the Common Lobster, *Homarus marinus*, the colour of which is a pale lavender; upon the back of the cephalo-thorax, however, there is a patch of mauve, and the large claws are of a bright pale blue; the usual mottled marking of the sides of the thorax are rather indistinct. This specimen reached me alive, so that I can vouch for the colours being quite natural. It was a full-grown female, carrying ova which was nearly mature. I remember having observed a mottled variety, and another which was a dull pink, both alive at the time I noted them; the pale blue variety is, however, less rare, I believe, though my specimen is particularly beautiful in tint.—EDWARD LOVETT (Addiscombe, Croydon).

## SCIENTIFIC SOCIETIES.

## LINNEAN SOCIETY OF LONDON.

November 6, 1884.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

A letter was read intimating that the late President, Mr. George Bentham, had bequeathed by his will a legacy of £1000 to the Society. A notice of invitation for the Fellows to attend the forthcoming Centenary (4th December) of the Royal Bohemian Society of Natural History in Prague, was also read from the chair.

Mr. R. A. Rolfe, of Kew, exhibited examples of British oak-gall produced by Cynipidean insects of the genus *Neuroterus*. These were the silk-button gall formed by *N. numismatis*, the globose gall produced by *N. ostreus*; the smooth spangle gall formed by *N. fumipennis*; the scarce spangle gall formed by *N. laeviusculus*; and the common spangle gall produced by *N. lenticularis*, as also a purple variety of the latter gall. He stated that the plan and details of the galls depend on the nature of the irritating fluid deposited by the insect; but, on the other hand, the different species of oak seem to have an influence in determining certain variations, as to colour, and it may be of the general growth of the galls.

Mr. Geo. Brook read a paper "On the Development of the Five-bearded Rockling, *Motella mustela*," in which the following points were enunciated:—(1). While there is only one large oil-globule in the normal egg of *Motella*, this is sometimes subdivided into from two to eight or even more, but in these cases there is always an abnormal development which often results in the death of the embryo. In those that survive the small oil-globules always coalesce to form one large one before the embryo hatches. (2) In the further development of the newly-hatched embryo there is a cranial flexure produced which is analogous to that so characteristic of Elasmobranchs. This is caused by the rapid development of the dorsal portion of the head, while the ventral portion remains comparatively quiescent. Later the ventral portion plays its part, and with the development of the jaws the brain is pushed back to its normal position. (3). As in other pelagic teleostean eggs, there is no circulation observable either in the embryo as in the vitellus up to the time of hatching, nor indeed for some time afterwards. (4). In *Motella*, the anal gut does not open on the ventral surface for at least a week after hatching. Ryder has shown the same to be the case with the Cod-fish, so that the young *Gadidae* would appear to be not in a position to take solid food at nearly so early a period of their existence as is usual with teleostans. Mr. Brook also called attention to the influence of temperature on the rate of development of pelagic eggs, and suggested that until we know the temperature at which the various observations are made on these forms no true comparison can be established.

A paper, by Mr. Thomas Henry Potts, entitled "Notes on some New Zealand Birds," was afterwards read. It contained chiefly memoranda and field observations on the Quail-hawk (*Hieracidea Novæ-Zealandiæ*), the Harrier (*Circus assimilis*), the Owl (*Athene Novæ-Zealandiæ*), the Kaka (*Nestor meridionalis*), the Sheep-killer (*N. notabilis*), the Long-tailed Cuckoo (*Eudynamis taitiensis*), the Bronze-wing Cuckoo (*Chrysococcyx lucidus*), the Kingfisher (*Halcyon vagans*), the Huia-bird (*Heteralocha acutirostris*), *Anthornis melanocephala*, the Wren (*Acanthisitta chloris*), and *Gerygone albofrontata*.—J. MURIE.

## ZOOLOGICAL SOCIETY OF LONDON.

November 4, 1884.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary made a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, and September, 1884, and called attention to certain interesting accessions which had been received during that period. Amongst these were specially noted two Red-cheeked Colies, *Colius erythromelan*, purchased June 12th; two Chaplain Crows, *Corvus capellanus*, from Fao, Persian Gulf, presented June 25th by Mr. B. Ffitch; a second specimen of the Heloderm Lizard, *Heloderma suspectum*, received in exchange from the Central-Park Menagerie, New York, U.S.A., July 3rd; a collection of Snakes from Japan and North America, brought home and presented to the Society by Mr. Gerald Walker, July 22nd, amongst which were representatives of five species new to the Collection; a young female Cape Sea-Lion, *Otaria pusilla*, from South Africa, presented to the Society by Capt. John Hewat, Superintendent of the Docks, Cape Town, July 25th; and a Fringed Gecko, *Platydactylus homalocephalus*, and six Black-spotted Toads, *Bufo melanostictus*, from Java, presented to the Society by Dr. F. H. Bauer.

Mr. Selater exhibited and made remarks on the skin of a Woolly Cheetah, *Felis lanea*, obtained at Beaufort West, South Africa, sent to him by the Rev. G. H. R. Fisk.

The Secretary exhibited, on behalf of Major W. Brydon, an egg of Blyth's Tragopon; and on behalf of Mr. J. C. Parr, a specimen of the chick of the Vulturine Guinea-fowl, *Numida vulturina*, hatched in Lancashire.

The Rev. H. H. Slater exhibited a specimen of the Barred Warbler, *Sylvia nisoria*, obtained on the Yorkshire coast.

Mr. H. E. Dresser exhibited specimens of the Barred Warbler, *Sylvia nisoria*, and of the Icterine Warbler, *Hypolais icterina*, killed in Norfolk.

Mr. W. B. Tegetmeier exhibited a specimen of the File-fish (*Balistes capriscus*), which had been recently caught off Folkestone.

Mr. F. E. Beddard read a paper on the anatomy of a gigantic Earth-worm, *Microchaeta rappii*, and pointed out its systematic position. For this very interesting specimen the author was indebted to the Rev. G. H. R. Fisk, of Cape Town.

Mr. A. G. Butler gave an account of a collection of Lepidoptera made by Major J. W. Yerbury at or near Aden. The author looked upon this collection as one of the greatest interest, since it not only contained a fine series of the beautiful species of *Teracolus* recently described by Colonel Swinhoe, but also many remarkable intergrades between certain long-established species, tending to prove either that hybrids between allied species are fertile, or that in Aden a condition of things still exists which in Asia proper and in Africa has long passed away.

A communication was read from Lieut.-Col. C. Swinhoe, containing an account of the Lepidoptera collected by him at Kurrachee between the years 1878 and 1880.

A communication was read from Mr. Thomas H. Potts, of Ohinitaki, New Zealand, in which he described a case of hybridism between two species of Flycatchers of the genus *Rhipidura*.—P. L. SCLATER, *Secretary*.

### NOTICES OF NEW BOOKS.

*Elementary Text-Book of Zoology. General Part and Special Part: Protozoa to Insecta.* By Dr. C. CLAUS; Translated and Edited by ADAM SEDGWICK, M.A. Pp. 615, figs. 491. London : W. Swan Sonnenschein & Co. 1884.

IT is with much satisfaction that we are able to announce the publication of the first volume of Mr. Sedgwick's translation of Prof. Claus' valuable Text-book of Zoology. It has for some time been known that the translation was in course of preparation, and teachers and students alike have been anxiously waiting for its appearance: teachers, because they have so often had to make statements at variance with or in advance of what are to be found in the text-books already published in English; and students, because they have been sighing for a work which should not be too difficult of comprehension, and which should be really well illustrated.

It is, for Englishmen, a matter of painful reflection that the best work yet known in the English language is that of Prof. Gegenbaur, which is, as we all know, a translation from the German, and is, moreover, a work on Comparative Anatomy, and by no means on Zoology, as that term is ordinarily understood. We are convinced ourselves that Comparative Anatomy, as taught by Prof. Gegenbaur, is the best introduction to the study of the phenomena of animal life; on the other hand, man's susceptibilities have to be considered, and, if of orderly disposition, a man often wants to know something of how animals are grouped, and is often desirous of learning some details as to creatures which, interesting in themselves and their habits, are not always the most appropriate objects of morphological demonstrations.

For this numerous class the work of Prof. Claus is in all respects to be recommended; it is more easy of comprehension,

and it is much more fully illustrated than that of Professor Gegenbaur.

We would lay especial weight on the illustrations of this work for two reasons; first, because correct figures are of enormous assistance to the student,—we need not quote the well-worn Horatian axiom, but all teachers know that good figures do sink into men's minds, and leave an impress far beyond that of the most lucid explanations of the best teachers; and secondly, because the text-books of Prof. Claus best known to zoologists are without illustrations: the subject of this translation was published last year, and is of somewhat smaller size than the well-known '*Grundzüge der Zoologie*', which reached its fourth edition two or three years ago. With regard to the work just mentioned, we may say that it is within our knowledge that serious proposals were made some seven years ago in Oxford as to its translation into English, and that, only a little later, the same idea was mooted in London; and we may say, further, that one of the chief reasons which led to the dropping of these proposals was the fact that the work was without illustrations.

We do not know what kind of representations, if indeed any, were made to Dr. Claus with regard to the preparation of a well-illustrated work; but we must say that, proposals or no proposals, the volume before us contains as rich a supply of well-drawn, well-engraved, and well-selected figures as ever man could desire. The volume is admirably printed, and the whole enterprise reflects the greatest credit on the publishers.

The translation runs very smoothly, and is such that it will be read with ease and pleasure. That there are numerous faults in the style we cannot deny, but these are for the most part those of the author, and not of the translator. Indeed, if we use the term style in the correct French sense, there is no style in the book at all; literary execution has been sacrificed to carefulness of statement—that is much truly in a scientific text-book; but there is something to be said on the other side. Anatomical and zoological works do want a little salt of good literary taste, and the student of Prof. Huxley's anatomical—or of Prof. Foster's physiological—text-books will have our sympathy, at any rate, when he laments the absence from this book of the charm of attraction that well-balanced sentences and well-constructed paragraphs always have.

Having said this much, we can say further that, knowing the character of Prof. Claus' "style," we looked with some anxiety as to the results of Mr. Sedgwick's attempt to do the work into English; though we note some sentences that we should like to have seen differently arranged, he has, on the whole, succeeded beyond even our best hopes for his victory: in the present condition of things, we may think ourselves lucky to get a truthful and clear account of a subject which, confessedly, it is difficult to describe to a commencing student.

There is only one fault that we must find with the translation, and this is that after the systematic names of some of the insects we have the German popular name; *e.g.* (p. 563), "*Panorpidae* (Schnabelfliegen)"; now "Schnabelfliegen" is no translation, but "Scorpion-Flies," which is the English equivalent, would have been; so again the *Coccidae* might have been called the Scale Insects, or Mealy Bugs, the *Fulgoridae* the Lantern-Flies, and the *Estridae* the Bot-Flies.

The first volume, which is alone now before us, has a most masterly general introduction to the study of Zoology, which, *inter alia*, is very properly regarded from its historical aspect; the Protozoa, Coelenterata, Echinodermata, Vermes, and Arthropoda are dealt with.

What little we shall dare to say in the way of criticism of the contents of the book will be best postponed till the second volume is also before us. When that is published the English zoologist will have no cause to complain of the want of an admirable introduction to his favourite study, however much he may lament that an Englishman is not the author of his handbook. Perhaps Mr. Sedgwick may sometime find leisure to give us himself a work which may take a place on our shelves beside that text-book on Comparative Embryology which we owe to his lamented teacher, the founder of that morphological school in Cambridge which is so rapidly restoring to our nation the honourable place in zoological activity of which various causes have conspired to deprive it; the countrymen of John Hunter and Charles Darwin must never rest till our schools and studies of biology are not only on a level with, but in advance of, those of other nations.



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